

Problem B. Gregor and Cryptography

Time limit 1000 ms

Mem limit 262144 kB

Gregor is learning about RSA cryptography, and although he doesn't understand how RSA works, he is now fascinated with prime numbers and factoring them.

Gregor's favorite **prime** number is P . Gregor wants to find two *bases* of P . Formally, Gregor is looking for two integers a and b which satisfy both of the following properties.

- $P \bmod a = P \bmod b$, where $x \bmod y$ denotes the remainder when x is divided by y , and
- $2 \leq a < b \leq P$.

Help Gregor find two bases of his favorite prime number!

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 1000$).

Each subsequent line contains the integer P ($5 \leq P \leq 10^9$), with P guaranteed to be prime.

Output

Your output should consist of t lines. Each line should consist of two integers a and b ($2 \leq a < b \leq P$). If there are multiple possible solutions, print any.

Sample 1

Input	Output
2 17 5	3 5 2 4

Note

The first query is $P = 17$. $a = 3$ and $b = 5$ are valid *bases* in this case, because $17 \bmod 3 = 17 \bmod 5 = 2$. There are other pairs which work as well.

In the second query, with $P = 5$, the only solution is $a = 2$ and $b = 4$.